CLAIMS

1. A light-emitting device formed by depositing p-type and n-type nitride semiconductor layers, comprising:

semiconductor-surface-electrodes to apply currents into each of the semiconductor layers;

an insulating layer which holds the semiconductor layers; and

mount-surface-electrodes provided on one surface of the insulating layer which is opposite to the other surface of the insulating layer where the semiconductor-surface-electrodes are made;

wherein one of the semiconductor layers has a non-deposited area where the other semiconductor layer is not deposited;

one of the semiconductor-surface-electrodes is built up on the surface of the non-deposited area;

VIA's are made in the insulating layer which connect electrically the semiconductor-surface-electrodes and the mount-surface-electrodes; and

the semiconductor-surface-electrodes, the insulating layer, and the mount-surface-electrodes are built up in this order on one side of the deposited semiconductor layers.

2. The light-emitting device of claim 1, wherein the insulating layer is made of one of resin, ceramics, or silicon.

3. The light-emitting device of claim 1, wherein the VIA is filled with electric conductor.

4. The light-emitting device of claim 1, wherein phosphor is provided on the surface or in the interior portion of the semiconductor layer.

5. A manufacturing method of light-emitting device, comprising:

a substrate forming process in which a semiconductor-substrate is formed by depositing p-type and n-type semiconductor layers on a transparent crystal substrate with a partly non-deposited portion, and by providing semiconductor-surface-electrodes on the semiconductor layers to apply currents into each of the semiconductor layers, wherein each of the electrode surfaces is exposed in one direction;

VIA forming process in which an insulating layer is formed on the surface of the semiconductor-substrate where the semiconductor-surface-electrodes are provided, also holes for VIA are made by partly removing the insulating layer over the semiconductor-surface-electrodes, also electric conductors are provided to form VIA's on the exposed surfaces of the semiconductor-surface-electrodes exposed by the insulator removals and on the inner walls of the holes for VIA, and also mount-surface-electrodes electrically connected to the semiconductor-surface-electrodes through the VIA are made on the surface of the insulating layer; and

substrate separation process in which the transparent crystal substrate is separated off from the semiconductor layers after the VIA forming process.

6. The manufacturing method of light-emitting device of claim 5, wherein the insulating layer is made of one of resin, ceramics, or silicon.

7. A manufacturing method of light-emitting device of claim 5, wherein the insulating layer formed in the VIA forming process is made of a insulating material of resin coated copper.

8. The manufacturing method of light-emitting device of claim 7, wherein the partial removal of the resin over the semiconductor-surface-

electrodes in the VIA forming process is done firstly by removing copper foils located on predefined resin of the resin coated copper, and secondly using the remained foil as a mask for resin removal process.

9. The manufacturing method of light-emitting device of claim 5, wherein the partial removal of the insulating layer over the semiconductor-surface-electrodes in the VIA forming process is done by exposing the insulating layer to laser beams or plasma.

10. The manufacturing method of light-emitting device of claim 5, wherein the separation of the transparent crystal substrate in the substrate separation process is done by using laser beams.

11. The manufacturing method of light-emitting device of claim 10, wherein a roughness structure is formed on a separation-induced surface of the semiconductor layers simultaneously with the separation of the transparent crystal substrate from the semiconductor layers by using laser beams.

12. The manufacturing method of light-emitting device of claim 11, wherein the roughness structure on the surface of the semiconductor layers is formed by irradiating the surface of the semiconductor layers with laser beams dedicated to forming the roughness structure along with the irradiation with the laser beams dedicated to separating the transparent crystal substrate.

13. A manufacturing method of light-emitting device, comprising:

a substrate forming process in which a semiconductor-substrate is formed by depositing p-type and n-type semiconductor layers on a transparent crystal substrate with a partly non-deposited portion, and by

providing semiconductor-surface-electrodes on the semiconductor layers to apply currents into each of the semiconductor layers, wherein each of the electrode surfaces is exposed in one direction;

VIA forming process in which an insulating layer having pre-formed holes for VIA corresponding to the semiconductor-surface-electrodes is laminated on the surface of the semiconductor-substrate where the semiconductor-surface-electrodes are provided, also electric conductors are provided to form VIA's on the surfaces of the semiconductor-surface-electrodes and on the inner walls of the holes for VIA, and also mount-surface-electrodes electrically connected to the semiconductor-surface-electrodes through the VIA are made on the surface of the insulating layer; and

substrate separation process in which the transparent crystal substrate is separated off from the semiconductor layers after the VIA forming process.

14. The manufacturing method of light-emitting device of claim 13, wherein the insulating layer is made of one of resin, ceramics, or silicon.

15. The manufacturing method of light-emitting device of claim 13, wherein the holes in the insulating layer are formed by exposing the insulating layer to laser beams or plasma.

16. The manufacturing method of light-emitting device of claim 13, wherein the separation of the transparent crystal substrate in the substrate separation process is done by using laser beams.

17. The manufacturing method of light-emitting device of claim 16, wherein a roughness structure is formed on a separation-induced surface of

the semiconductor layers simultaneously with the separation of the transparent crystal substrate from the semiconductor layers by using laser beams.

18. The manufacturing method of light-emitting device of claim 17, wherein the roughness structure on the surface of the semiconductor layers is formed by irradiating the surface of the semiconductor layers with laser beams dedicated to forming the roughness structure along with the irradiation with the laser beams dedicated to separating the transparent crystal substrate.